AMENDMENTS TO THE CLAIMS

Claims 1-96   (Canceled)

97.   (Currently amended) A kit, comprising

(1) a plurality of recombinant constructs, each of which comprises an expression control sequence from a <u>gene of a</u> coordinated system of interest, operatively linked to <u>a</u> <u>sequence encoding</u> a reporter,

(2) at least ~~three~~ about <u>three</u> agents from a first set of agents that are known or predicted to act on at least one of said expression control sequences, and

(3) at least about three agents from a second set of agents,

wherein said at least about three agents from said first and second sets of agents are combined in an inter-set combinatorial fashion

and, optionally,

~~(3) an electroporation device suitable for electroporating said recombinant~~ ~~constructs into suitable cells; and/or~~

(4) instructions for how to detect the effects of the agents on the expression control sequences.

Claims 98-99. (Canceled)

100.   (New) The kit of claim 97, wherein the expression control sequences are from genes involved in apoptosis, DNA repair, angiogenesis, signal transduction, vascular invasion, cell growth, reproduction, division, motility, differentiation, activation, differentiation, T-cell activation, neurogenesis, nerve regeneration, myogenesis or muscle regeneration.

101.   (New) The kit of claim 97, wherein the expression control sequences are from genes that play a role in signal transduction pathways or are genes that are responsive to signal transduction events.

102.   (New) The kit of claim 97, wherein the number of expression control sequences linked to reporter sequences is at least about 8.

103.   (New) The kit of claim 97, wherein each of the reporter sequences encodes a reporter protein, selected from green fluorescent protein, luciferase, β-galactosidase, chloramphenicol acetyltransferase, and/or luciferase.

104.   (New) The kit of claim 97, wherein the at least about three agents in the first set of agents and the at least about three agents in the second set of agents are different, and are chemical compounds, biological agents, drugs, drug candidates, toxins, modulatory agents, DNA damaging agents, oxidative stress-inducing agents, pH-altering agents, membrane-disrupting agents, metabolic blocking agents, chemical inhibitors, ligands for cell surface receptors, oligonucleotides, antibodies, transcription stimulators or inhibitors, translation stimulators or inhibitors, protein-stabilizing agents, protein destabilizing agents, mitogens, growth factors or hormones, or combinations thereof.

105.   (New) The kit of claim 97, wherein the at least about three agents in the first set represent different categories of stimuli for a cell than the at least about three agents in the second set, wherein the agents in the two sets are:

   a) agents that act at the surface of a cell vs. agents that function within a cell,

   b) agents that exhibit different mechanisms of action,

   c) agents that have different chemical structures vs. agents within a particular chemical class that differ from one another,

   d) agents that are produced within a cell vs. agents that are introduced directly into a cell,

   e) agents having a known mechanism of action on an expression control sequence vs. agents not having a known mechanism,

   f) agents having a known effect on the expression control sequence vs. test agents,

   g) agents known to have an effect on at least one of the expression control sequences vs. agents not known to have an effect on any of those expression control sequences,

h) naturally occurring agents vs. artificially generated molecules, and/or

i) physical agents vs. environmental stimuli, or

j) a combination thereof.

106.   (New) The kit of claim 97, wherein agents from the first set and/or agents from the second set induce one or more of the following categories of response when introduced to or into cells:

a) altered levels of RNA produced in response to the agent,

b) altered levels of proteins translated from said RNA,

c) altered levels of post-translational protein modification,

d) altered movement of an RNA polymerase molecule along a DNA template, as determined by nuclear run-on analysis, in response to the agent,

e) changes in the formation of protein-DNA complexes, as determined by kinetic analysis, in response to the agent, and/or

f) changes in lipid membrane composition, or

h) a combination thereof.

107.   (New) The kit of claim 97, wherein the agents in the first set are mitogens.

108.   (New) The kit of claim 97, wherein the agents in the second set are pharmaceutical agents.

109.   (New) The kit of claim 97, wherein the agents in the first set are chemokines or mitogens and the agents in the second set are pharmaceutical agents.

110.   (New) The kit of claim 97, wherein at least two of the first set of agents are combined in an intra-set combinatorial fashion.

111.   (New) The kit of claim 97, wherein at least two of the second set of agents are combined in an intra-set combinatorial fashion.

112.   (New) The kit of claim 97, wherein the first set of agents contains at least about 6 agents and the second set of agents contains at least about 8 agents.

113.   (New) The kit of claim 97, which contains instructions that teach:

how to measure at least two sets of different categories of responses of the expression control sequences to the agents in the first set of agents and/or the second set of agents,

how to input the responses into a database, thereby generating a raw response profile for each of the expression control sequences,

how to process the database comprising the raw profiles with a multivariate statistical method, thereby generating a processed response profile, and, optionally,

how to display the processed profiles.

114.   (New) The kit of claim 97, which contains instructions that teach:

how to measure the responses of the expression control sequences to the agents in the first and the second set of agents,

how to input the responses into a database, thereby generating a raw response profile for each of the expression control sequences,

how to process the database comprising the raw profiles with a multivariate statistical method, thereby generating a processed response profile, and, optionally,

how to display the processed profiles.

115.   (New) The kit of claim 114, wherein the multivariate statistical method is

a) principal component analysis,

b) hierarchical clustering,

c) unsupervised neural networks, and/or

d) ANOVA studies,

or a combination thereof.

116.   (New) The kit of claim 97, which further comprises at least three agents from a third set of agents, which are different from the agents in the first set and the second set,

wherein said at least about three agents from said first, second and third sets of agents are combined in an inter-set combinatorial fashion

117. (New) The kit of claim 97, further comprising a computer system for generating and analyzing multi-factorial biological response profiles, comprising

a) means for inputting responses into a database, wherein said responses are generated by

i) exposing each member of the plurality of expression control sequences, each of which is operatively linked to a heterologous expression control sequence, independently, to

at least about three stimuli from the first set of stimuli, wherein at least two of the stimuli in said first set of stimuli are combined in an intra-set combinatorial fashion, and to

at least about three stimuli from the second set of stimuli, wherein at least two of the stimuli in said second set of stimuli are optionally combined in an intra-set combinatorial fashion,

in an inter-set combinatorial fashion, and

ii) detecting the responses of said biological entities to said stimuli;

b) means for analyzing said inputted responses; and, optionally,

c) means for displaying the analyzed responses.

118. (New) A method for using a kit of claim 97 to generate and analyze multi-factorial biological response profiles, comprising

a) exposing each member of said plurality of expression control sequences in (1), independently, to at least about three agents from said first set of agents, wherein at least two of the stimuli in said first set of stimuli are, optionally, combined in an intra-set combinatorial fashion,

b) detecting a first category of responses of said expression control sequences to said agents,

c) generating a response profile for each of said expression control sequences,

d) exposing each of said members of the plurality of expression control sequences, independently, to at least two of the agents in said second set of agents, optionally wherein at least two of the agents in said second set of agents are combined in an intra-set combinatorial fashion,

in an inter-set combinatorial fashion with set first set of agents,

e) detecting the first category of responses of said expression control sequences to the agents in d), and

f) generating a response profile for each of said expression control sequences, which includes the responses detected in b) and in e).